



IRAP: INTEGRATING CLIMATE INFORMATION AND DECISION PROCESSES FOR REGIONAL CLIMATE RESILIENCE



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IRAP

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IRI and U. of Arizona Team Up for Climate

Posted by IRI on May 22, 2014

IRI and the University of Arizona address climate vulnerability in most at-risk areas of the world in new project

The Caribbean, Asia's Indo-Gangetic Plain and West Africa are three regions known to be extremely vulnerable to climate variability and change, particularly to droughts, extreme weather events and stresses on food production, water resources and coastal areas. A new five-year project jointly led by the International Research Institute for Climate and Society and the University of Arizona aims to strengthen climate resilience in these regions using strategies in the sectors of water resources, hazard risk management and coastal planning and management.

"We know that today's climate threatens hard-won development gains made in these regions, and these threats are likely to worsen with future climate change," says IRI Director Lisa Goddard. "Our goal is to not only help them better anticipate climate-related impacts but also to identify ways to reduce their vulnerability to such events before they occur, while also increasing their ability to bounce back if and when they're hit with such events."



Scientists Adrian Treisman and Cédrick

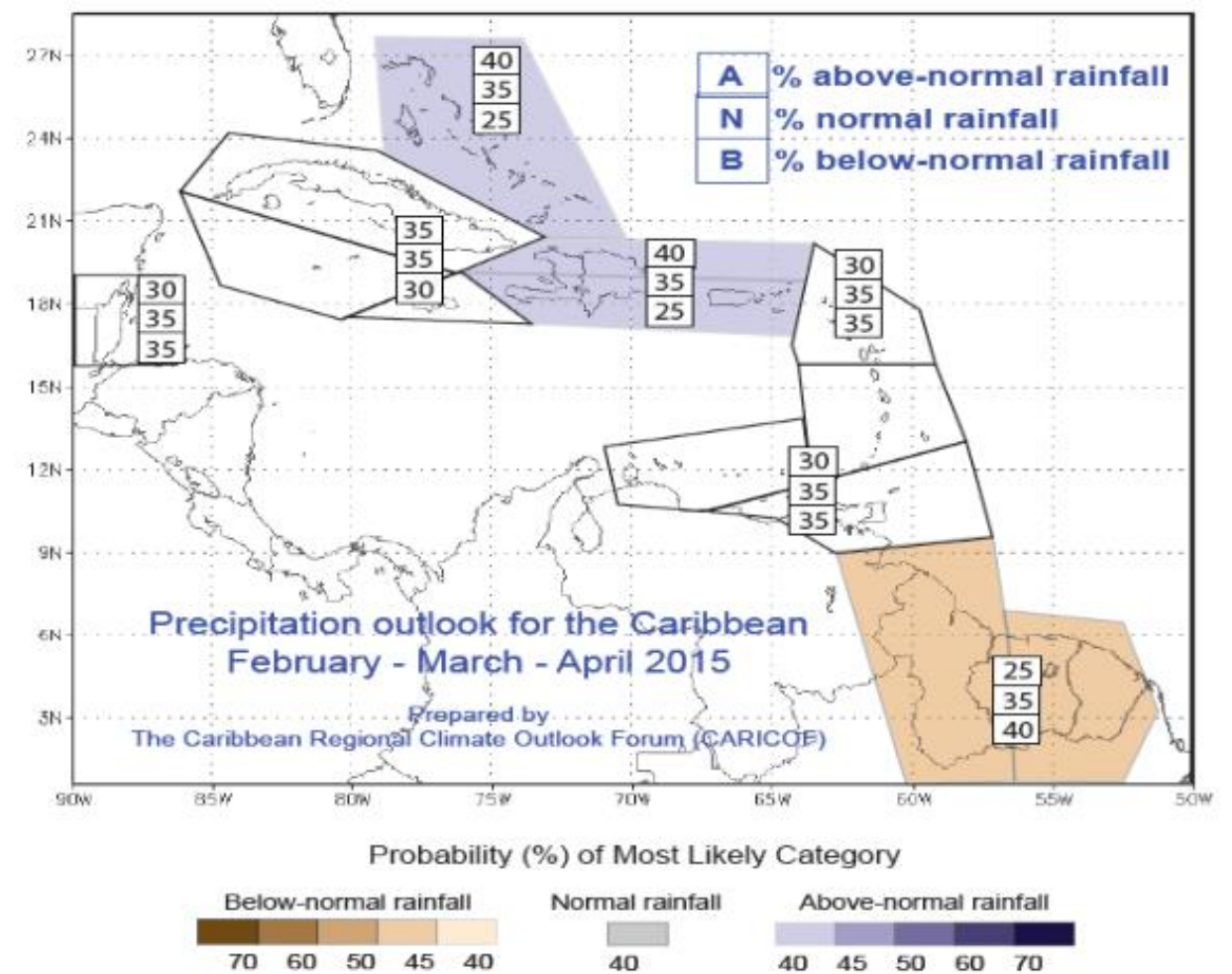


IRAP OBJECTIVE

Foster adaptation and **increase resilience** of communities and sectors vulnerable to climate variability and change by **supporting decision-making and risk management** through improved design, production and provision of **use-inspired climate information**, particularly as an integral part of international development goals.

FIVE INTEGRATED STRATEGIC GOALS:

1. DETERMINE VULNERABILITIES AND USER NEEDS
2. CO-PRODUCE CLIMATE INFORMATION
3. CREATE RELEVANT DECISION SUPPORT TOOLS
4. IMPROVE SYSTEM THROUGH EVALUATION
5. BUILD LOCAL CAPACITY



CLIMATE RISK MANAGEMENT IN THE CARIBBEAN: DISASTER IMPACTS, FORECASTS & PREPAREDNESS

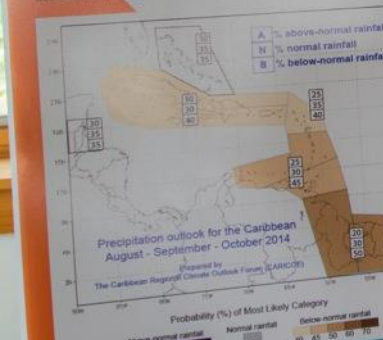
KELLI ASHLEY ARMSTRONG, CLIMATE AND SOCIETY MASTER OF ARTS PROGRAM CANDIDATE 2014, COLUMBIA UNIVERSITY

INTRODUCTION

The islands in the Caribbean have a sub-tropical climate with a pronounced dry and wet season. The dry season is November to April, and the wet season May to October. Within the wet season is also the Atlantic hurricane season, which extends June to November 1st. As a result, strong winds and storm surge from hurricanes, as well as floods from heavy rainfall (or droughts for lack thereof), all threaten the islands during the wet season.

Disasters in the Caribbean are most often due to meteorological events such as the ones aforementioned. Of them, hurricanes are more common due to their size and strength, resulting in large numbers of people affected and high costs for damages incurred. Despite the relatively high forecast skill for hurricane, flood and drought events, disaster risk in the Caribbean remains high due to other factors such as difficulties with topography and communicating forecasts and preparedness.

While retreating from the coastal zone on an island is not always a feasible option, natural science and engineering techniques are able to offer some adaptation and mitigation solutions for topographic issues. However, when it comes to communicating forecasts and preparedness to disaster risk managers (DRMs) across sectors, social sciences are needed to evaluate and address the challenge.



RESEARCH AND ACTIVITIES

Center for Research on Environmental Decisions (CRED) Post-Doctorate Fellow, Tanya O'Garra and I are working on a study to examine the determinants of disaster impacts, with a special focus on seasonal forecasts and investments in disaster preparedness. Our activities so far include:

- Literature reviews of disaster reports, databases and related studies
- Design and development of semi-structured interviews to collect additional information from Caribbean DRMs
- Leading and participating in International Research Applications Program (IRAP) exercises on vulnerability, forecasts and preparedness, and network mapping at the May 2014 Caribbean Climate Outlook Forum (CARICOF).

DELIVERABLES

- Database of disaster events, impacts, forecasts and preparedness actions in the Caribbean
- Catalogue of Caribbean Institute for Meteorology and Hydrology (CIMH) climate outlook forecasts
- Outline for future disaster exercises

The database Dr. O'Garra and I developed has over 70 variables used to document 120 extreme climate events in the Caribbean over the past 50 years. These include 43 hurricane events, 75 flood events and 2 drought events. Though the majority of the 20000 rows in the database do not contain data yet, it is our hope that they will shortly.

Meanwhile, active links to CIMH climate outlook forecasts are now catalogued in a spreadsheet according to year and season for easy online reference. This provides quicker access to past and current forecast information for use in a variety of applications, including developing exercises with and for DRMs.

LESSONS LEARNED

As I have learned, data management in itself is a challenge, let alone communication. It is no wonder that meteorological climate risk management in the Caribbean has trouble translating forecasts to DRMs and others when staff is limited and information is to be tailored to each sector each season.

Assistance from regional and national DRMs is much needed in this effort to advance seasonal planning for sustainable climate risk management. However, DRMs themselves need help interpreting the forecasts in order to improve their mass communication on sectoral disaster preparedness.

Over the past few years a number of Met and Agro-Met technicians from the Caribbean have been trained to contribute to this effort. So far it has been successful, but these programs require additional funding in order to train more persons.

ACKNOWLEDGEMENTS

CRED: Tanya O'Garra,
Mr. Glen Duguid, Samantha Garner, Erin Coughlan
CIMH: Shelley Ann Cox, Cedric Van Meerbeek, Adrian Trommer
IRAP Team



NEXT STEPS

Our research is on-going. Pending activities include:

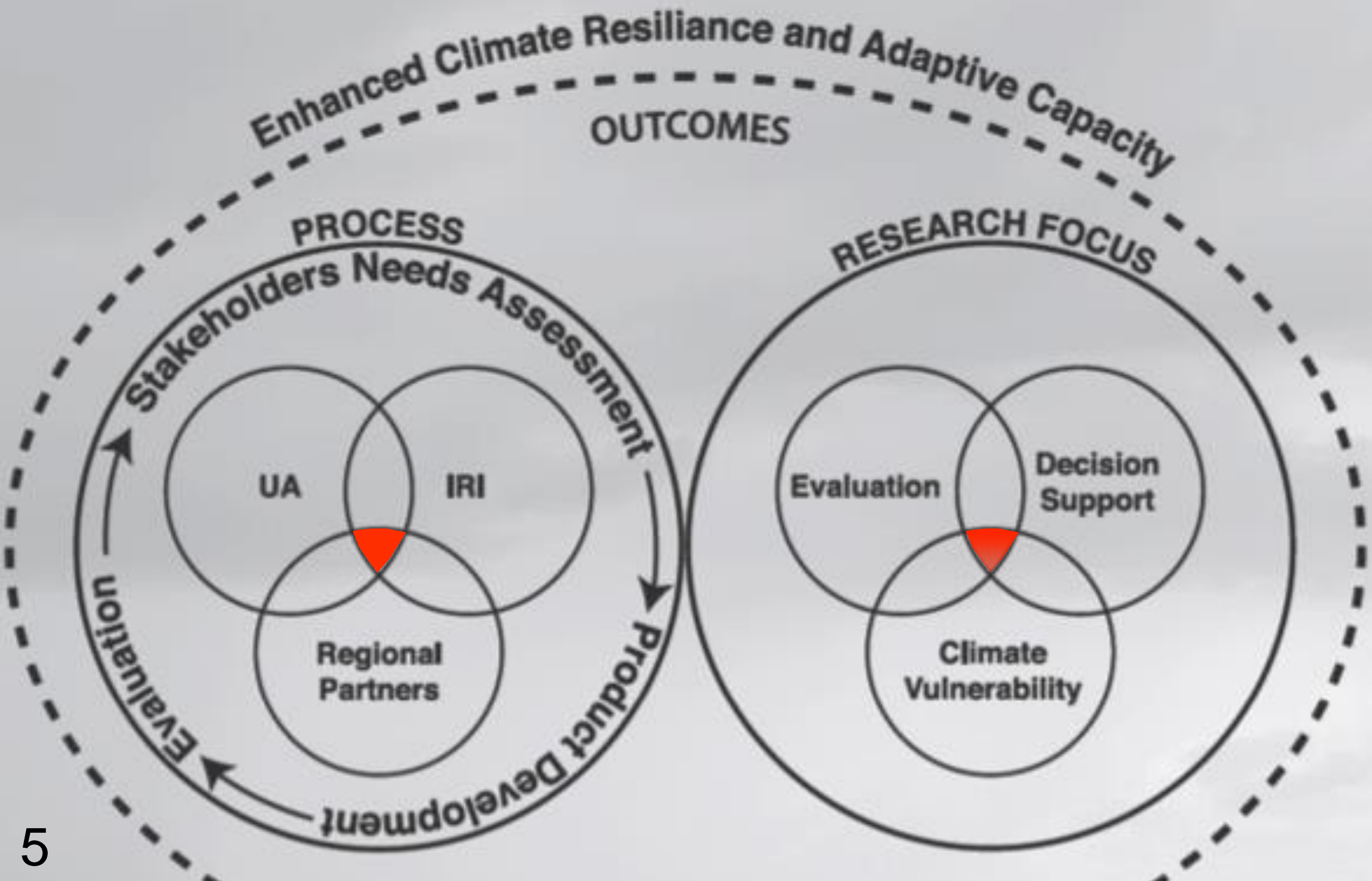
- Statistical analyses of data
- Developing exercises for DRMs using analyses and forecast information produced by CIMH
- Proposing other research applications for the database, for example, an economic valuation of information study regarding seasonal forecasts and preparedness actions

When these activities are completed, we will have a clearer vision of the "big picture" to share with stakeholders in Caribbean climate risk management. For now, that vision of two-way knowledge relating to also pending interpretation of the statistical analyses or when the database is completed.

The latter is an end goal that would come about ideally as a result of integrating surveys or additional interviews with Caribbean DRMs, drawing new sources of comprehensive disaster reports in the region, and learning about studies in the Caribbean pertaining to the main variables in our database.

As we become more familiar with personnel in Met and DRM offices across the region, these objectives will likely be met, possibly ending us to reach our end goal at a faster pace than the present.

APPROACH



FIVE PILLARS OF THE IRAP APPROACH

TIMESCALES

 MONTHS

 DECADES

CLIMATE CHANGE

- 1 IDENTIFY VULNERABILITIES AND OPPORTUNITIES IN CLIMATE VARIABILITY AND CHANGE IN COLLABORATION WITH “STAKEHOLDERS”**
Which systems? What components within systems?
- 2 UNDERSTAND/QUANTIFY/REDUCE UNCERTAINTIES**
Learn from the past, monitor the present, provide relevant info on the future
- 3 IDENTIFY INTERVENTIONS (TECHNOLOGIES) THAT REDUCE VULNERABILITY**
E.g., vaccination, drought resistance crops, water holding capacity
- 4 IDENTIFY POLICIES AND INSTITUTIONAL ARRANGEMENTS THAT REDUCE VULNERABILITY AND/OR TRANSFER RISKS**
Early Warning / Early Response Systems, Insurance, Credit
- 5 DESIGN EVALUATION AT OUTSET OF TARGETED INTERVENTIONS & ENGAGEMENT**
E.g., baselines, outputs vs outcomes



ETHIOPIA – A MODEL

ETHIOPIA CLIMATE SERVICE: INFORMATION DELIVERY

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Climate Analysis

Rainfall and temperature time series (1983-2010) reconstructed from station observations and remote sensing proxies. This interface allows users to view rainfall, maximum and minimum temperature climatologies and anomalies.

Climate Monitoring

This is a rainfall-monitoring product based on dekadal rainfall. The interface allows users to view recent rainfall with a seasonal and recent historical perspective. Time series analyses of rainfall data are generated based on user-selected parameters.

Climate and Agriculture

Explores historical daily precipitation by calculating simple seasonal statistics. Many options can be specified to produce yearly time series of a chosen seasonal diagnostic of the daily precipitation data. The user can then choose to map the mean, standard deviation or probability of exceeding a chosen threshold, over years; clicking on the map will then produce a local yearly time series of the chosen diagnostic. A series of links allow one to download graphs, maps and data files.

Climate and Water

Flood Prone Area In Ethiopia

Under Construction

Climate and Health

Empirically-derived thresholds of precipitation, temperature and relative humidity are used to assess the climatic suitability of malaria transmission. The interactive map initially displays the number of months during the year when climatological averages meet these requirements. Users may gain insight into how often these conditions have actually occurred during any particular month by clicking on the map at the location of interest.

Seasonal Climate Monitoring

I can put a text to describe my maproom.

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FIVE PILLARS OF THE IRAP APPROACH

TIMESCALES

 MONTHS

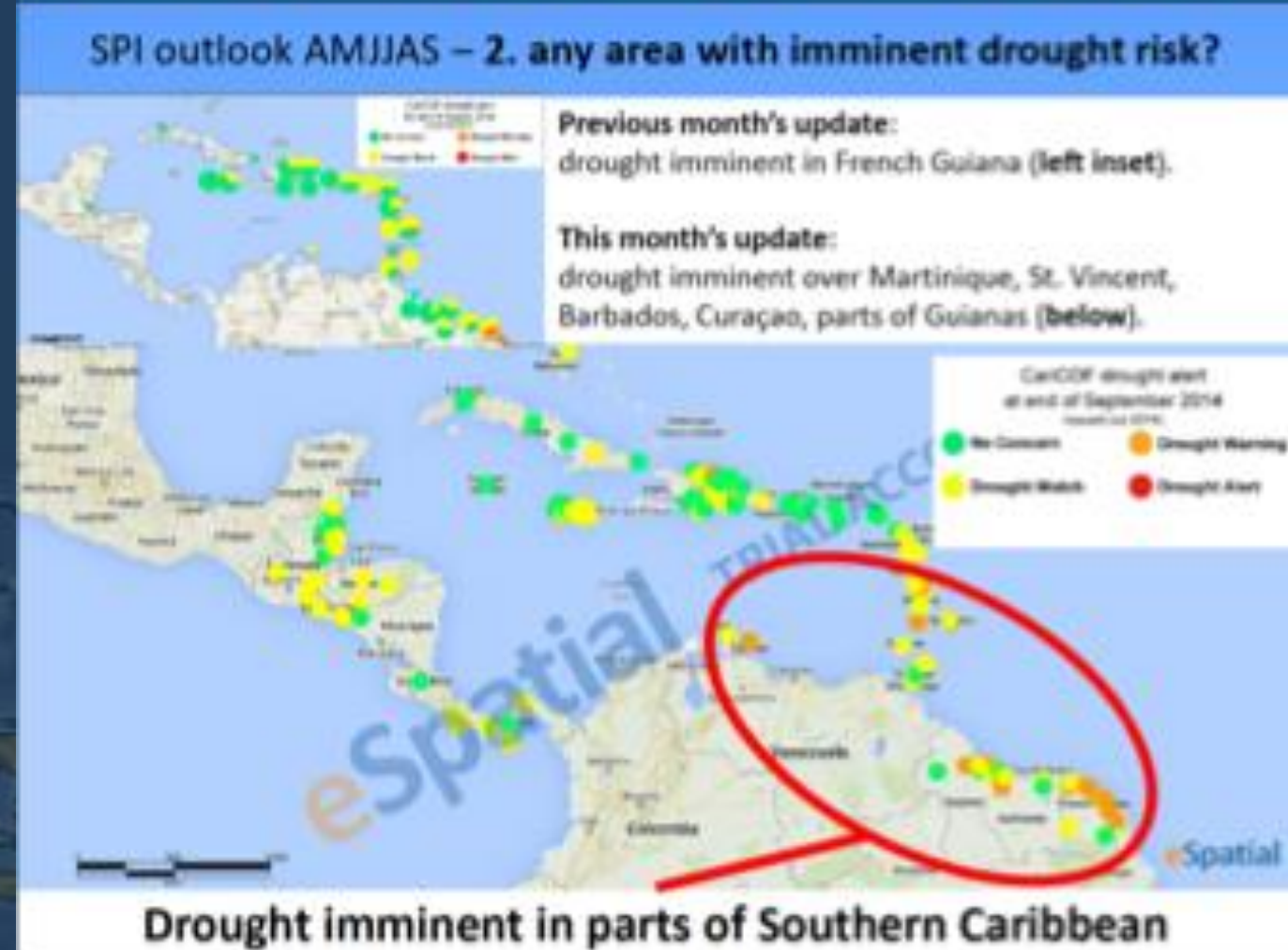
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IRAP WORKSHOP POST CARICOF KINGSTON, MAY 2014

- LITERATURE REVIEW
- WORLD CAFÉ
- SMALL GROUPS ON DISASTERS
- SOCIAL NETWORK ANALYSIS
- INTERVIEWS
- PASSIVE OBSERVATIONS
- EVALUATION SESSION
- FOCUSED PROJECTS



THE IRAP APPROACH

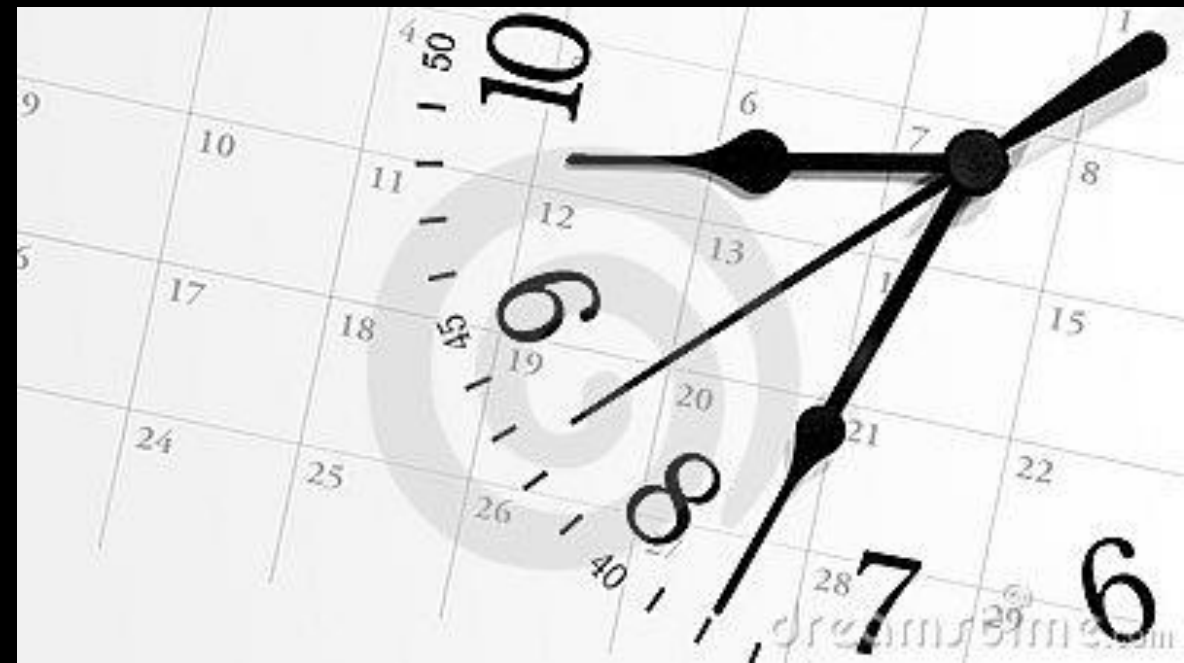
COFFEE RUST



So, what about Partnerships?



- Why Partner?
- Critical Ingredients of successful Partnerships
- Some Challenges



IRAP ↔ RISA

- Team members
- Social Science Methods
- Compare findings
- Scaling
- Research-to-Action
- Evaluation



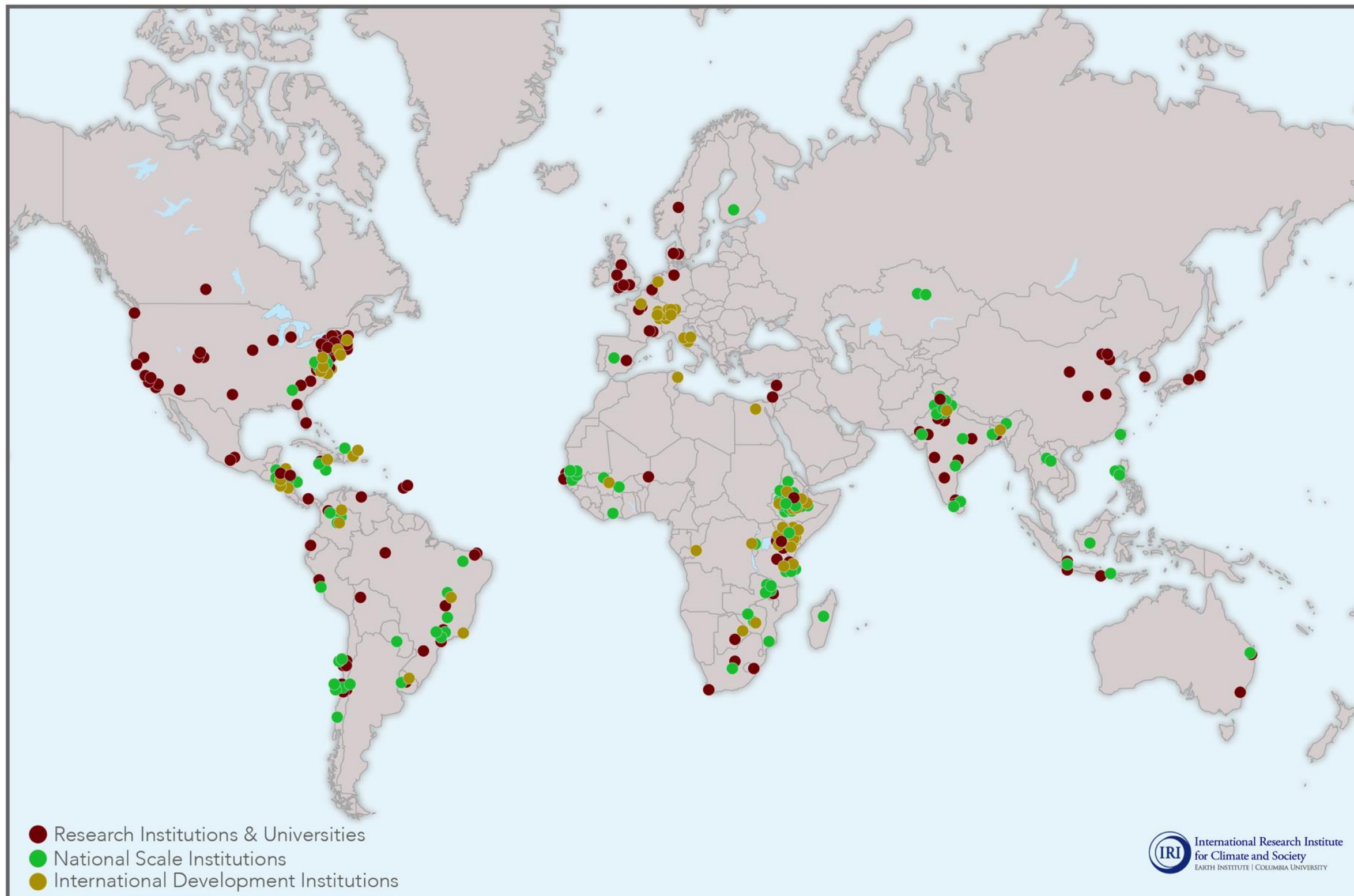
EVALUATION

Design scientifically rigorous evaluation and build as integral part of the project from the very beginning. Establish baseline.

Evaluate IRAP program in context of other activities and interventions underway in the region

Engage stakeholders from the beginning:

- Trust-building and Transparency
- Identify what is important
- Outcomes/Impact focused



COLLABORATIONS

Organizations with which IRI has collaborated since 1996

<http://iri.columbia.edu>

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